

What is claimed is:

- 1 1. In an array of conductive joints between signal pads on a surface of an integrated circuit
2 member of a material having a first thermal expansion responsiveness and corresponding
3 contacts on an aligned wiring support member of a material having a second thermal
4 responsiveness,
5 the improvement comprising:
6 an interface having first and second portions,
7 said first portion of said interface containing an array of elongated conductive joint
8 members each having a contacting area made up of a length contacting dimension and
9 a width contacting dimension and with said length contacting dimension being longer
10 than said width dimension, and,
11 said second portion of said interface having a contacting area approximating the
12 contacting area of said conductive joint members of said first portion and operable to
13 accommodate expansion mismatch stresses in said conductive joint members.
- 1 2. The improvement of claim 1 wherein said second portion of said interface is at least one
2 contacting area positioned orthogonally with respect to said common direction.
- 1 3. The improvement of claim 1 wherein said second portion of said interface is an elongated
2 contact in contact with said surface and a circular contact in contact with said wiring support
3 member for each member of said array.

1 4. The improvement of claim 1 wherein said second portion of said interface is a contacting
2 area taken from the group of:

3 contact areas to the surface to which said conductive joints are attached,
4 alternate conductive joint members attached to said wiring support member; and,
5 elongated and circular contacts at opposite ends of each conductive joint with said
6 elongated contact at said surface and said circular contact in contact with said
7 wiring support.

1 5. The improvement of claim 1 wherein said second portion of said interface is an elongated
2 contact in contact with said surface having major and minor essentially perpendicular axes
3 and a circular contact having a radius in contact with said wiring support member for each
4 member of said array.

1 6. The improvement of claim 5 wherein the bending stress resistant value of said second
2 portion of said interface is a ratio of said radius value over said minor axis value.

1 7. An improvement in an array of conductive joints between pads on a surface of an
2 integrated circuit member of a material having a first thermal expansion responsiveness and
3 corresponding contacts on an aligned wiring support member of a material having a second
4 thermal responsiveness,
5 comprising in combination:
6 an interface between said pads and said contacts, having first and second portions,
7 said first portion of said interface containing an array of elongated conductive joint

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8 members each having a contacting area made up of a length contacting dimension and
9 a width contacting dimension and with said length contacting dimension being longer
10 than said width dimension,
11 said array of conductive joint members each being oriented with said length contacting
12 length dimension in a common direction, and,
12 said second portion of said interface having a contacting area approximating the
13 contacting area of said conductive joint members of said first portion and oriented in
14 a direction operable to accommodate expansion mismatch stresses in said
15 conductive joint members.

1 8. The improvement of claim 7 wherein said second portion of said interface is at least one
2 contacting area positioned orthogonally with respect to said common direction.

1 9. The improvement of claim 7 wherein said second portion of said interface is an elongated
2 contact in contact with said surface and a circular contact in contact with said wiring support
3 member for each member of said array.

1 10. The improvement of claim 9 wherein said second portion of said interface is a contacting
2 area taken from the group of:

3 contact areas to the surface to which said conductive joints are attached,
4 alternate conductive joint members attached to said wiring support member; and,
5 elongated and circular contacts at opposite ends of each conductive joint with said
6 elongated contact at said surface and said circular contact in contact with said

7 wiring support.

1 11. The improvement of claim 10 wherein said second portion of said interface is an
2 elongated contact in contact with said surface having major and minor essentially
3 perpendicular axes and a circular contact having a radius in contact with said wiring
4 support member for each member of said array.

1 12. The improvement of claim 11 wherein the bending stress resistant value of said second
2 portion of said interface is a ratio of said radius value over said minor axis value.

1 13. The process of forming an array of conductive joint connections between signal pads
2 on a surface of an integrated circuit member of a material having a first thermal expansion
3 responsiveness and corresponding contacts on an aligned wiring support member of a
4 material having a second thermal responsiveness,
5 comprising in combination the steps of:
6 forming a selected thickness screen stencil of selected length and width approximately
7 half length dimensions for measured volume openings oriented along said length for
8 each pad and contact combination member of said array,
9 positioning said screen stencil over said integrated circuit, in registration with said
10 orientation of said pads
11 wiping a slurry of particles of a low temperature fusible material in a fluid in the
12 direction of said long dimension of said openings, across, into and filling said
13 openings in said screen stencil,

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14 removing said screen stencil, leaving measured volumes of said selected length and
15 width alignment and with selected orientation on said integrated circuit,
16 positioning said printed circuit over said measured volumes in registration with said
17 pads and,
18 fusing each said measured volume of said low temperature fusible material to a
19 respective pad and contact combination.

1 14. The process of claim 13 wherein said low temperature fusible material is solder.

1 15. The process of claim 14 wherein each pad and contact combination has an elongated
2 shape.

1 16. The process of claim 15 wherein in said forming step said openings are selected to
2 have one of said length and width dimensions aligned with a wipe direction from side to
3 side of said array.

1 17. The process of claim 16 wherein in said forming step said openings are selected to
2 have one of said length and width dimensions aligned with a wipe direction from center
3 to side of said array.

1 18. The process of claim 17 wherein in said forming step said openings are selected to
2 have one of said length and width dimensions aligned with the direction of greatest
3 thermal cycling expansion mismatch movement.